300

1

Total Page : 8

ENTRANCE EXAMINATION, 2012

M.Phil./Ph.D.

INTERNATIONAL TRADE AND DEVELOPMENT

[Field of Study Code : ITDP (106)]

Time Allowed : 3 hours *Maximum Marks* : 70

Answer Question No. **1** and *any* **three** other questions

1. *(a)* Consider the function $U\alpha(x) = \frac{x^{\alpha} - 1}{\alpha}$; $0 < \alpha \leq 1$ and $0 \leq x < \infty$. Show that on R_{++} (i.e., for any $x > 0$), $\lim_{\alpha \to 0} U\alpha(x) = \ln x$. Further show that $U\alpha(x)$ is concave and monotone increasing in x. 5

(b) The probability density function of a random variable x is given as follows :

$$f(x) = Ae^{-(1/5)x}, \quad \text{for } x > 0$$

Obtain the value of A and find the probability of $x > 10$. 5

2. In the home country, demand for X is given by

$$q_d^h = 100 - P_h, \quad (0 < P_h < 100)$$

and in the rest of the world by

$$q_d^f = 200 - 2P_f, \quad (0 < P_f < 100)$$

P_h and P_f are the home and foreign prices of X respectively, and both are measured in terms of a common numeraire. The industry is everywhere competitive with the home supply function given by

$$q_s^h = 2P_h - 50, \quad (P_h > 25)$$

1/1

and for the rest of the world

$$q_s^f = 10P_f - 40, \quad (P_f > 4)$$

Shipping a unit of the good X from one country to the other costs 5.

(a) Find the domestic and foreign price of the good under free trade. 5

(b) Derive the transport demand equation. Hence find the level of transport which will eliminate trade. Evaluate the elasticity of the transport demand with respect to its price when transport costs are 10. (*Hint* : Work out the import demand function.) 15

3. "The infant industry argument for protection can never be justified on the basis of developments in trade theory." Discuss, theoretically, using models of trade that you are familiar with. 20

4. "Urban wage may not fall despite the evidence of involuntary unemployment." Explain this proposition using Stiglitz's turnover model. 20

5. *(a)* Define a stochastic process. When is a stochastic process called strictly stationary and when is it called weakly stationary? Show that for a Gaussian process, weak stationarity implies strict stationarity. 10

(b) An econometrician was given the task of investigating how public expenditure in welfare schemes and per capita GDP affect the human development of an economy. The econometrician sets up the following regression model for the study :

$$HDI_i = \ln(PE_i) + \ln(PGDP_i) + \varepsilon_i$$

where, HDI_i = Human development index for country i

PE_i = Public expenditure on welfare schemes in country i

$PGDP_i$ = Per capita GDP of country i

ε_i = Disturbance term following classical linear regression model assumptions

Comment on whether the above model is a valid one. If so, explain why. If not, explain why and suggest an alternative model. 10

6. Consider the following Keynesian model for a closed economy :

$$Y = C + I + G$$
$$C = C_0 + c(Y - T),\ 0 < c < 1$$
$$I = I_0 + \dot{Z}$$
$$\dot{Y} = -\gamma \dot{Z}$$

where Y is output, C is consumption, I is actual investment, G is government consumption, T is taxes, I_0 is planned investment and Z is the stock of inventories. A variable with dot denotes its rate of change over time, that is, $\dot{Z} = \frac{dZ}{dt}$ and $\dot{Y} = \frac{dY}{dt}$. C_0 and I_0 are exogenous parts of consumption and investment respectively, and c denotes the marginal propensity to consume. Assume that prices are fixed and that G and T are both exogenous.

(a) Interpret the equations of the model. 5

(b) Show that the model is stable. Illustrate your answer graphically by using a phase diagram for the model. 7

(c) Show the effects over time on output, consumption, actual investment and inventories of a tax-financed increase in government consumption $(dT = dG)$. 8

3/1